QUICK LOCK BIG

QuickLock BIG
User Manual

Version 04/2014

Sold by:

rausch ELECTRONICS USA

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IMPORTANT DISCLAIMER:

This manual is subject to change without notice. Updates can be obtained online at www.repipetech.com. This manual does not guarantee the product will work properly. Contact a RAUSCH Certified Installer to ensure proper installation. The following are important disclaimers to consider before using the QuickLock BIG system.

1. QuickLock BIG installations are to be performed only by trained and qualified personnel, using adequate and safe equipment.

2. Read and follow the instructions, as described in this manual before attempting installation.

3. Prior to beginning the installation, verify that all the equipment and components involved are undamaged and in proper working condition.

4. QuickLock BIG is designed for and must only be used in municipal sewer, storm sewer and potable water environment. For all other applications, please consult Rausch prior to use.

5. Do not use QuickLock BIG in broken pipes with protruding objects.

6. Verification of lines inner diameter / I.D. must be known as accurate as possible in order to ensure the correct sleeve is used. Refer to the Technical Data Sheet at the end of this manual.

7. If after reading this manual you have any questions or concerns, please contact Rausch USA.

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1. About this document

These instructions supplement the basic QuickLock user manual.

They specifically describe how to use the QuickLock BIG system.

Please observe the aforementioned user manual with its general instructions on using the QuickLock system.

1.1 Regulations

Regulations vary on a state by state basis.

2. Description of the Quick Lock BIG system

2.1 Intended use

Cross-section

The QuickLock BIG sleeve is a product for permanently and tightly sealing leaking pipe joints, radial cracks, and longitudinal cracks in large pipes and manholes of DN 800 and larger.

- The sleeve is 20 cm wide.
- The sealed area (between the circumferential seals) is approximately 12 cm.
  (The distance between the circumferential seals is approximately 14 cm. However, these are pulled together when the jacket is expanded so that the sealed area is 12 cm wide.)

The system is made from AISI 316L stainless steel of grade 1.4404 and
an EPDM compression seal.

- The materials used are permanently resistant in municipal wastewater systems.
- Their suitability must be ascertained for use in industrial or polluted wastewater.

2.2 Components and functions

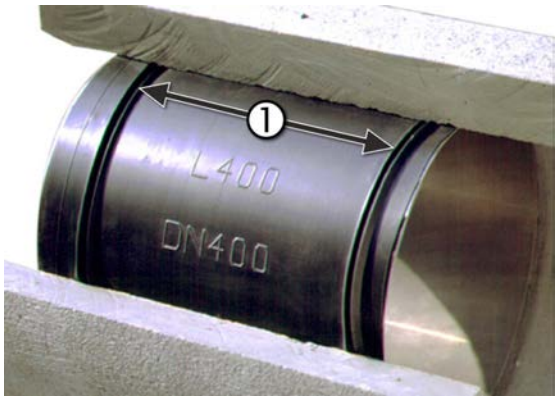
System components

• Stainless steel sleeve consisting of two or more sections • Locking screws (4x) • Sliding blocks (4x)	
• Rubber jacket (1x)	

2.3 Description of the system and procedure

QuickLock BIG consists of:

- A 316L stainless steel sleeve
- An EPDM rubber jacket
- The damaged section is repaired and sealed by permanently clamping the steel sleeve in place.
- This exerts a pressing force which compresses the rubber jacket against the inside of the pipe.
- The area between the circumferential seals (1) is completely sealed.



When the steel sleeve is manufactured, it is rolled tighter than the diameter of the pipe to be repaired.

Two toothed strips are punched into the sleeve, on the left and right.

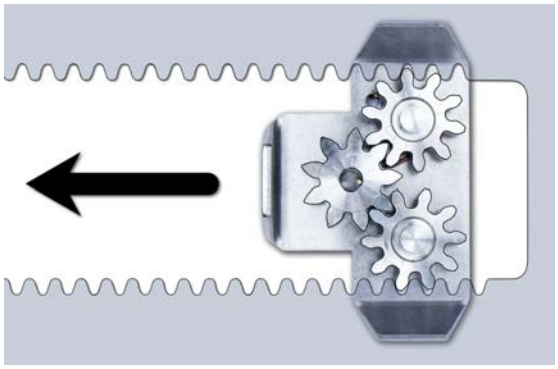
- In each toothed strip there is a lock.
- The lock is for clamping the steel sleeve.
- The lock can only move in one direction and stops the sleeve from contracting once it has been expanded.

The lock moves along the toothed strip (to the left as shown here).

This means that the steel sleeve can only expand in one direction.
The lock prevents it from contracting again.

The increments are only 0.65 mm, which means that the sleeve is almost infinitely adjustable.

How it works: The middle gear wheel is on a spring and acts as a ratchet for the others.



2.4 Suitability and materials used

2.4.1 Properties of the pipe to be repaired

QuickLock BIG can be used to repair all common types of pipe:

- Vitrified clay pipes
- Concrete pipes
- PVC pipes
- Glass-reinforced PVC pipes
- Cast iron pipes
- Steel pipes

2.4.2 Stainless steel

The QuickLock BIG sleeve is made of 316L stainless steel of grade **1.4404**. This grade of stainless steel is characterized by its high corrosion resistance.

- QuickLock BIG is designed for use in municipal wastewater systems.
- For use with industrial wastewater or where the wastewater contains high levels of chloride salts, the required corrosion resistance must be ascertained.
- 316L stainless steel of grade 1.4404 may be used up to a chloride concentration of 600 mg/l.

2.4.3 EPDM rubber

Like the steel sleeve, the thermoset polymer EPDM jacket is designed for municipal wastewater systems. EPDM is characterized by its excellent physical properties and its resistance to aging, ozone, weathering and environmental effects, alkalis, and various chemicals.

EPDM is unsuitable, or only suitable with restrictions for:

- Solvents
- Ethers, esters, ketones, methylene chloride
- Animal and vegetable fats, oils, fuels
- Concentrated fruit juice, oxidizing acids

2.4.4 Industrial use

QuickLock is also suitable, with certain restrictions, for industrial use, depending on the properties of the fluids.

Note: Before using QuickLock in industrial, non-municipal wastewater systems, the corrosion resistance of the 316L stainless steel and the EPDM sleeve must be verified.

3. How to use the system

3.1 Preparation

3.1.1 Inspecting the pipe

Before using QuickLock BIG, the pipe must be inspected to ascertain whether it can be repaired with the system.

See the main user manual.

3.1.2 Preparing the damaged area

Before installing the QuickLock BIG sleeve, the damaged area must be prepared as follows:

- Manually remove all protruding obstacles (seals, roots)
- Manually even out any joint misalignments of more than 0.5 cm using special mortar.

  In some circumstances, using epoxy resin for reprofiling may only be possible when the concrete is wet, but not soaked through. Generally, we do not recommend it.

  Recommended mineral mortars:

  - Sealt-Tec P
  - Ergelit S100
  - Ombran MHP 15

Flowing water (infiltration) always poses problems.

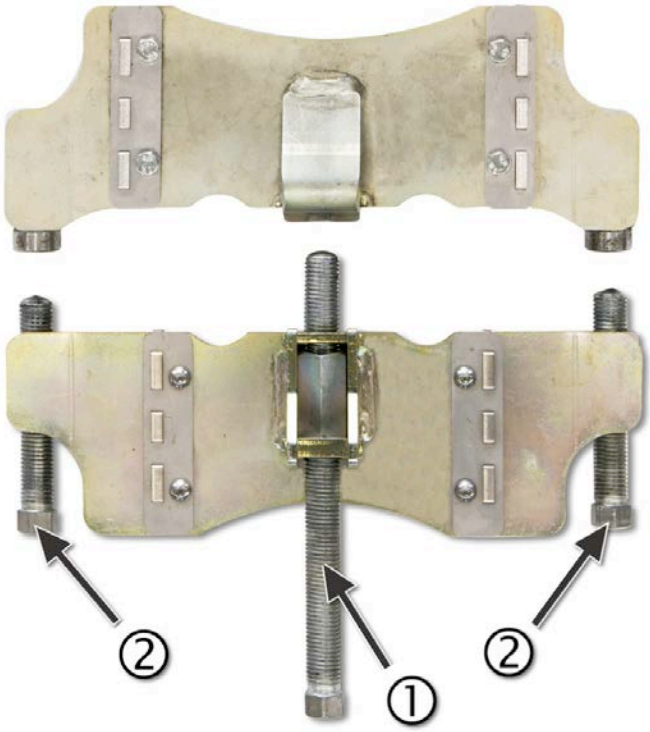
- Therefore, stop the infiltration in advance using plugging mortar.
- Even out any corroded, porous inner pipe surfaces in the area to be sealed using special mortar.

3.2 Equipment and materials

Installation tools

(Supplied by Rausch USA)

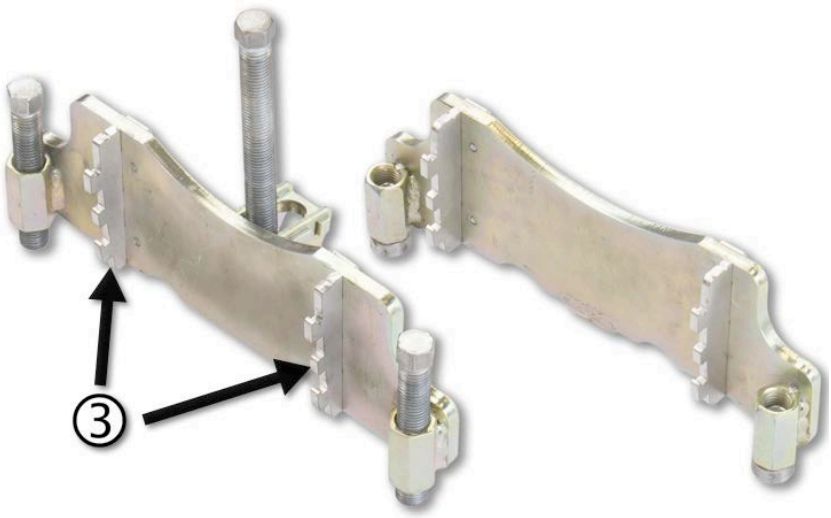
- Four clamping tool sections
  - 2 x with screw unit
  - 2 x with seat



(1) Spindle
For pre-tensioning the sleeve

(2) Clamping screws
For clamping the sleeve and pressing it in place

(3) Retaining lug
For attaching the tool to the sleeve



Depending on the pipe diameter, the retaining lugs (3) on the installation tool may have to be changed. These parts are supplied with the tools.

The retaining lugs must be mounted as illustrated (3).

DN 800/900 > DN 1000

Required accessories

Make sure you have the necessary tools.
If necessary we can provide the tools for sale or hire.

- Lubricant
- Ruler or tape measure
- 8 mm Allen key
- 17 mm socket
- Crayon
- Interchangeable socket wrench (or 17 mm ratchet wrench)
- Plastic or rubber mallet
- Talcum powder
- Laser for measuring the damaged area (optional, not shown)
- Pneumatic socket wrench (optional for rapid installation)

3.3 Installing QuickLock BIG

Installation

Bringing in the sleeve

- Do not assemble the sleeve.
- Bring in the sleeve via the manhole entrance.

Putting the sleeve together

- Join the sleeve sections together so that the tracks punched out of them are on the outside.
- Place the sliding blocks in the tracks.
- Secure the sliding blocks with the locking screws.

- Adjust the sleeve to the smallest diameter and tighten the locking screws.

Applying talcum powder to the rubber jacket

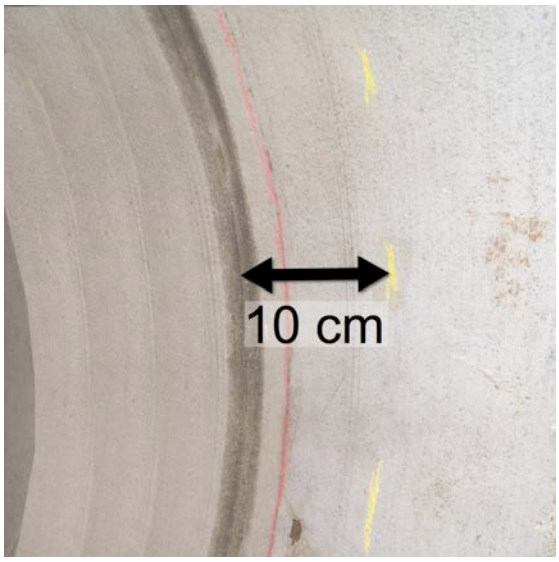
- Apply talcum powder to the inside of the rubber jacket.

Preassembling the sleeve

- Pull the jacket over the sleeve until the tapered rubber edge lies on the steel sleeve.
- The preassembled sleeve is rolled so tightly that it can be taken into the pipe and turned around there.

Marking out the position

- On one side of the damage, at a distance of 10 cm from the center (the sleeve length is 20cm), mark out the position of the sleeve all the way around the circumference of the pipe.



Positioning the sleeve

- Position the sleeve so that the tapered edge of the rubber faces against the direction of flow.

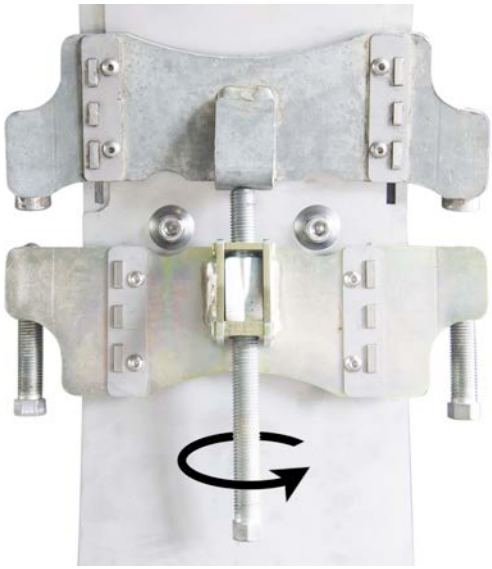
Direction of flow

Aligning the sleeve

- Align the sleeve to the marking in the pipe.
- Turn the sleeve so that the locking screws are roughly level on the left and right sides of the pipe.
- The sleeve must always be installed perpendicular to the axis of the pipe.
  When using a spirit level, the pipe slope must be adjustable.

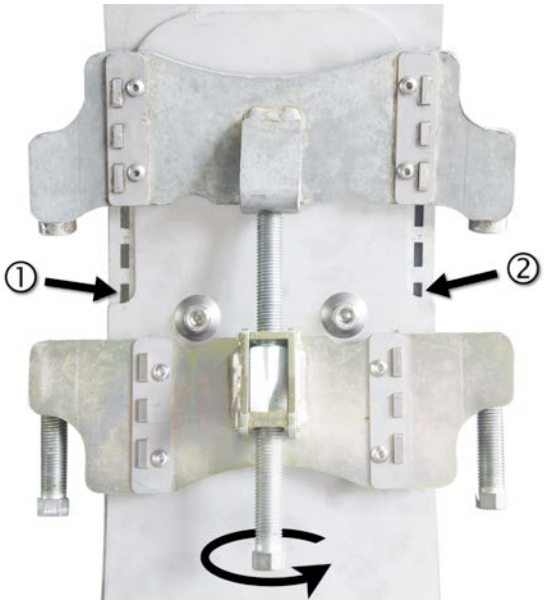
Attaching and securing the clamping tools

- The clamping tools on the left and right sides are identical.
- However, the clamping tools are aligned differently on the left and right: one of them points up and the other points down.
- Attach the two parts of each clamping tool as close together as possible.
- Tighten the spindles to hold the clamping tools in place.



Expanding the sleeve

- Start on one side.
  - Loosen the locking screws.
  - Tighten the spindle to about half way until the sleeve is pressed against the pipe.
  - When expanding the sleeve, make sure it opens up evenly.
    The easiest way to do this is to look at the holes on the left (1) and right (2).
- Continue on the other side:
  - Loosen the locking screws here too.
  - Tighten the spindle to about half way.

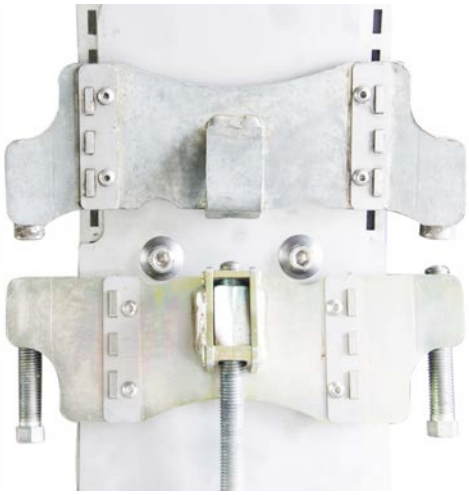


Aligning to the marking

- Just before the sleeve is pressed to the pipe, align it once again to the marking or the axis of the pipe.

Repositioning the clamping tools

- Tighten the locking screws.
- Loosen the spindles.
- Reposition the two parts of each clamping tool as close together as possible.
- Fasten them with the clamping screws.



Clamping

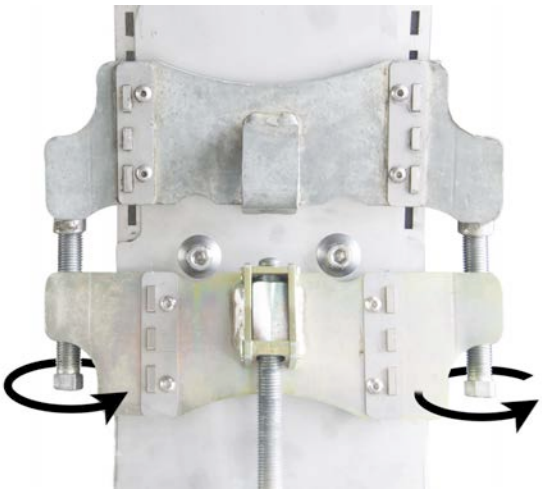
- Keep working on both sides of the sleeve alternately:
  - Loosen the locking screw.
  - Tighten the two clamping screws evenly. Use the holes as a guide.

Tapping in

- While you are doing this, occasionally tap all the way round the sleeve with the mallet so that the tension is evenly distributed.

Note

The spindle is only designed for expanding the sleeve. The sleeve is clamped using the two clamping screws on the left and right of the tool.

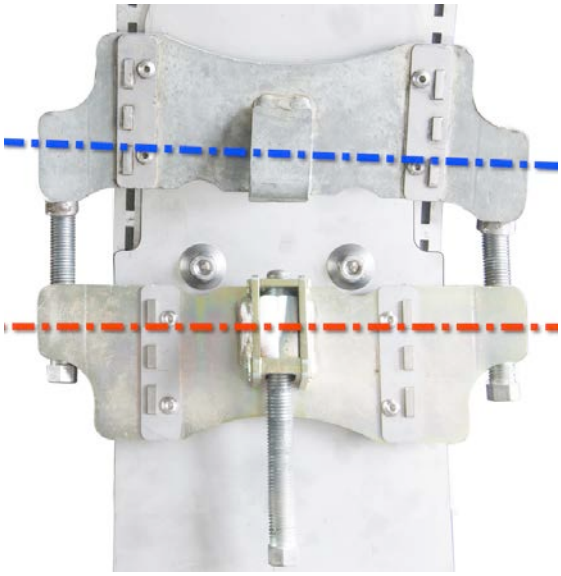


Compressing to 12 mm / 13 mm

- Keep clamping until the added material (rubber jacket + metal) is less than
  - 12 mm for DN 800 – DN 1300
  - 13 mm for more than DN 1300
- Measure all the way round (< 12 mm/13 mm).

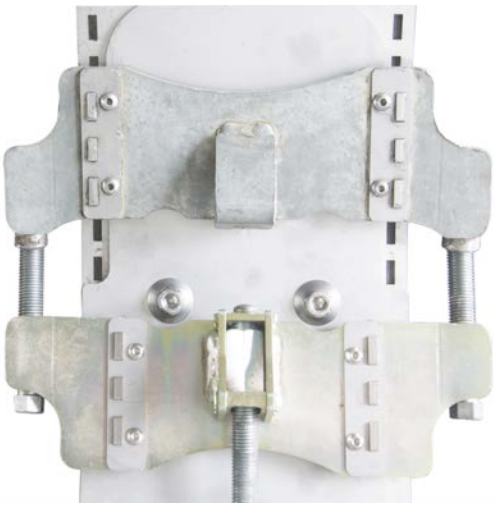
Eccentric expansion (if necessary)

- For minor joint misalignments, bends, or persisting leaks, the sleeve can be expanded eccentrically using the second clamping screw. **Note:** If the sleeve is expanded too eccentrically, the tools can become jammed.
- Use the holes as a guide.



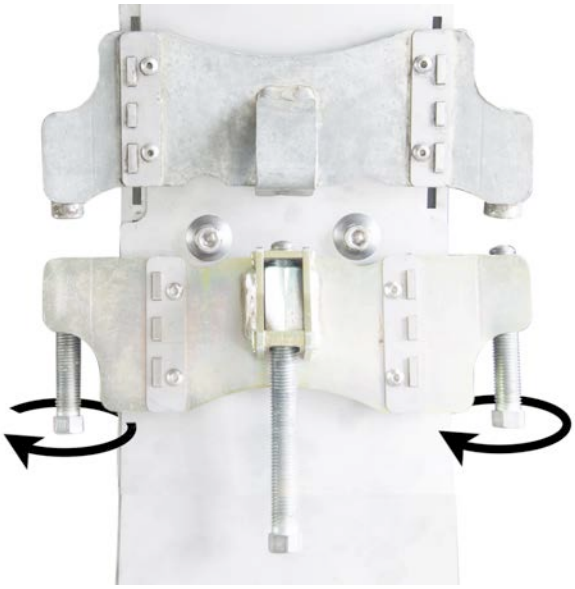
Tightening the locking screws

- Make sure that the sleeve has reached its final state.
- Tighten the locking screws using the ratchet.



Removing the clamping tools

- Loosen the clamping screws of the tools.
- Remove the tools.

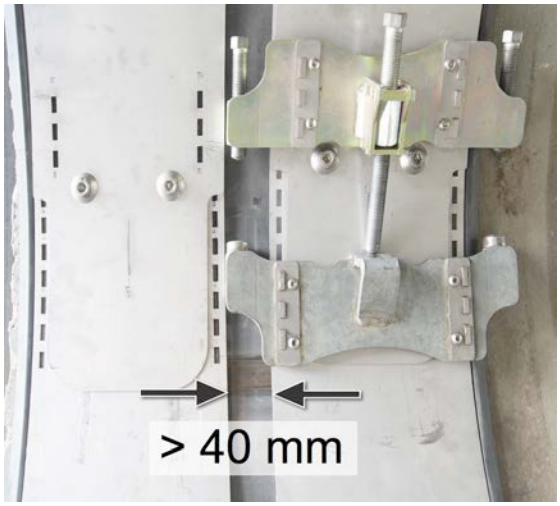


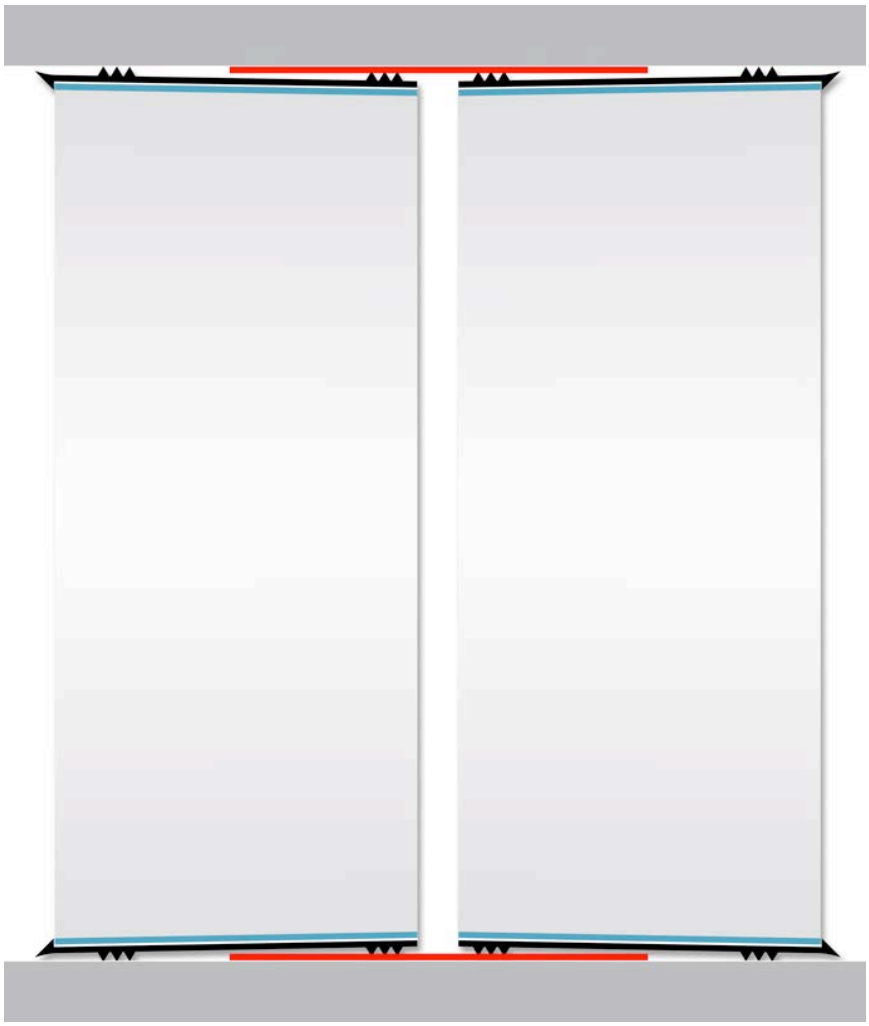
- The QuickLock BIG sleeve now forms a tight and reliable seal.

3.4 Serial installation

For longer areas of damage, serial installation is sometimes possible.

- We can supply a 25 cm wide rubber overlap, with each half between the actual seal and the pipe wall.
- The distance between the sleeves should be at least 40 mm in order to leave enough space for the clamping tools.
- When two BIG sleeves are installed in series, the tapered rubber edge on each one faces outwards.
- If more than two sleeves are installed in series, the tapered rubber edge must be trimmed off on the middle ones.

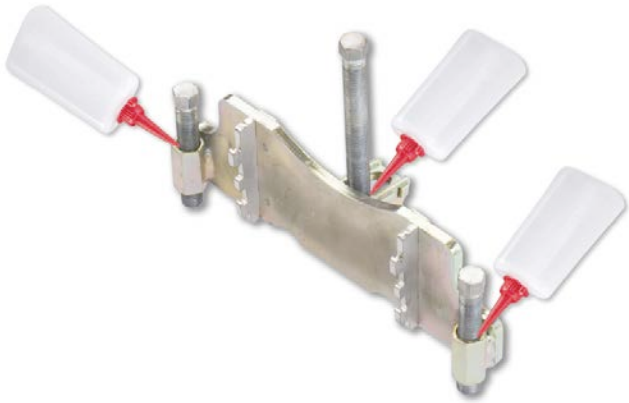




3.5 Tool maintenance

Maintenance

- The spindles and clamping screws must be treated with high-pressure lubricant (Metaflux lubricating metal) after each use.



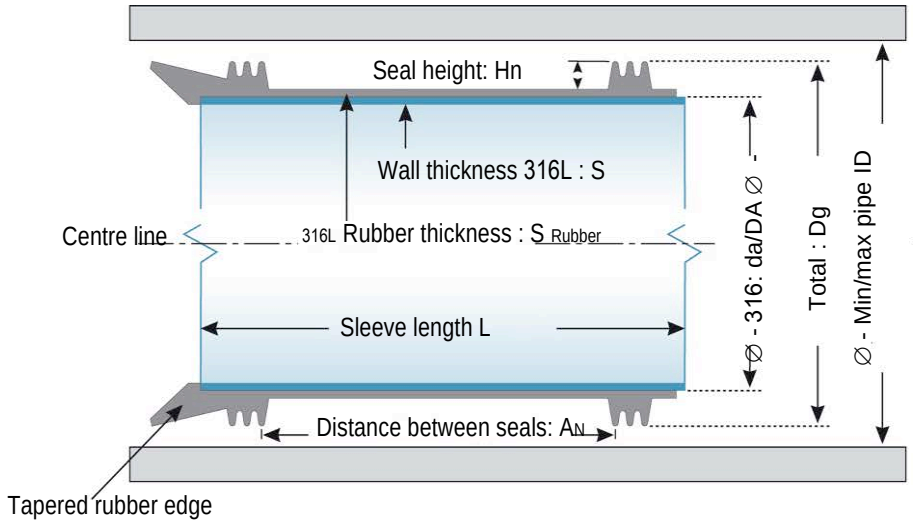
- Damaged retaining lugs can be replaced with the aid of the two socket screws.

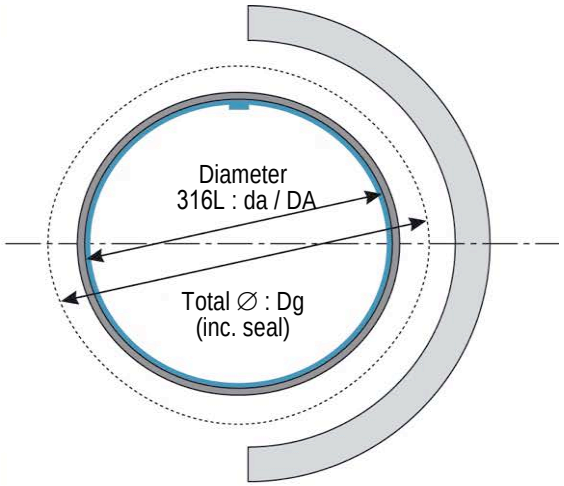
DN 800/900

> DN 1000

4 Appendix 1
Technical data sheet

QUICK BIG LOCK System


Seal height: Hn
Wall thickness 316L : S
Centre line
316L Rubber thickness : S Rubber
Sleeve length L
Distance between seals: AN
Tapered rubber edge
Ø - 316: da/DA Ø -
Total : Dg
Ø - Min/max pipe ID



QuickLock BIG sleeve DN	x parts	Sleeve length	Total diameter, rolled	Suitable for pipes from / to		Stainless steel sleeve			Rubber jacket			Total weight
				Pipe ID min.	Pipe ID max.	Wall thickness s	316L pipe rolled da	Max. expanded diameter DA	Rubber thickness	Height of seals	Distance between seals	
mm		*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*kg*
Designation:		*L*	*Dg*	*DN min*	*DN max*	*S 316L*	*da*	*DA*	*S Rubber*	*Hn*	*An*	
800	2	200	738	770	830	3	710	815	3	11	140	17.9
900	2	200	838	870	930	3	810	915	3	11	140	19.7
1000	2	200	938	970	1030	3	910	1015	3	11	140	21.6
1100	2	200	1038	1070	1130	3	1010	1115	3	11	140	23.7
1200	2	200	1138	1170	1230	3	1110	1215	3	11	140	25.7
1300	2	200	1238	1270	1330	3	1210	1315	3	11	140	27.6
1400	3	200	1338	1370	1430	4	1310	1415	3	11	140	
1500	3	200	1438	1470	1530	4	1410	1515	3	11	140	
1600	3	200	1538	1570	1630	4	1510	1615	3	11	140	
1700	3	200	1638	1670	1730	4	1610	1715	3	11	140	
1800	3	200	1738	1770	1830	4	1710	1815	3	11	140	